Inflorescence of Euphorbia.—Another student, SCHMIDT, has undertaken to interpret the morphology of the cyathium of Euphorbia,[28] regarding which there are nearly as many views as investigators. He considers the cyathium as an inflorescence, of unequal development in different species, in which the primary staminate flowers arise first in a spiral of $\frac{2}{5}$ divergence sometimes so low as to bring the flowers almost into a whorl. Next arise the involucral leaves (except in *E. meloformis*). The shoot which forms the primary staminate flowers branches at first dichasially; next to form *Wickeln* (perhaps also *Schraubeln*) so that the whole in the axil of an involucral leaf is a *Doppelwickel* (*Doppelschraubel*). The scales arise mostly at the base of the second and third staminate flowers of each group and are to be looked upon as their bracts. They are unequally developed, being generally larger the more open is the spiral of the involucral leaves, whose insertion is sometimes enlarged on the inside, and concrescent with the scales. The nectaries are to be considered as emergences. *E. capitulata* Rchb. is separated from the genus to form a new one, *Diplocyathium*, on account of its aberrant inflorescence.—C. R. B.

Spectrum of chlorophyll.—It is well known that the absorption bands in the spectrum of a live leaf do not correspond in position to those of a solution of chlorophyll. To account for this "displacement" two theories have been current: that the chlorophyll exists as solid particles like a precipitate in the chloroplast (HAGENBACH, LOMMELL, REINKE); or that the chlorophyll in the chloroplast is dissolved and its solvent modifies the spectrum because it has a higher dispersive power (KUNTH, TSCHIRCH). IWANOWSKI, after spectrophotometric studies, agrees with neither of these views.[29] He succeeded in producing a spectrum almost exactly like that of a live leaf by precipitating chlorophyll in strong alcoholic solution by diluting with water and adding a few drops of $MgSO_4$. On this and other grounds he concludes that the spectrum due to the light reflected from the chloroplasts themselves superposed on the true absorption spectrum produces the displacement, which increases with the size of the granules. This resembles in fundamentals TIMIRIAZEFF'S hypothesis of 1872.—C. R. B.

Morphology of Aspergillus.—FRASER and CHAMBERS,[30] in a study of *Aspergillus herbariorum*, reach the following conclusions. The conidiophores are multinucleate, and each conidium contains about four nuclei. The female organ consists of a septate stalk, a one-celled ascogonium, and a one-celled trichogyne, all of which are multinucleate. The antheridium is a small, long-stalked, multinucleate cell which either fuses with the tip of the trichogyne or degenerates before reaching this stage. Normal fertilization probably occurs in some cases, and

[28] SCHMIDT, H., Ueber die Entwicklung der Blüten und Blütenstande von *Euphorbia* L. und *Diplocyathium* n. g. Beih. Bot. Centralbl. **22**[1]:21–69. *pls. 2–5.* 1907.

[29] IWANOWSKI, D., Ueber die Ursache der Verschiebung der Absorptionsbänder in Blatt. Ber. Deutsch. Bot. Gesells. **25**:416. 1907.

[30] FRASER, H. C. I., and CHAMBERS, H. S., The morphology of *Aspergillus herbariorum*. Annales Mycol. **5**:419–431. *pls. 11, 12.* 1907.

in others it is replaced by a fusion of ascogonial nuclei in pairs. After either process the ascogonium becomes septate, and each of its cells gives rise to ascogenous hyphae. In the ascus two nuclei fuse, and three successive divisions result in eight spores, which subsequently become multinucleate. The authors regard Aspergillus as a primitive type of Ascomycetes, from which most of the others can be derived; and suggest that the Ascomycetes are related to the Basidiomycetes and the Florideae.—J. M. C.

Adventitious buds in leaves of Gnetum.—In plants of *Gnetum Gnemon* L., grown in a hothouse of the Botanic Garden at Utrecht, the tips of the leaves regularly produced adventitious buds. VAN BEUSEKOM[31] finds that these buds are formed as a result of the attacks of a scale insect, *Aspidirtus dictyospermi* Morg., a species with a world-wide distribution in the tropics and in hothouses. The punctures of this insect result in yellow vesicles at various points on the leaf, and one or more near the apex stimulate the development of endogenous callus buds. The author "explains" the appearance of the buds in the apical part alone of the leaf, by assuming that "the small wound causes an afflux of nutrient matter in an apical direction," and that this necessarily stops just beyond the apical wounds. Of course this is a mere assumption, the like of which is often made, but it would puzzle any of those who use it to show how "an afflux of nutrient matter" could occur before growth actually begins.—C. R. B.

Conjugation and germination in Spirogyra.—An examination by TRÖNDLE[32] of several thousand zygospores, some sectioned and some observed entire, confirmed the current account that the two nuclei remain separate for some time after the zygospore is formed. In *Spirogyra communis* the sexual nuclei fuse two or three weeks after the formation of the zygospore. Two successive mitoses giving rise to four nuclei, and a subsequent fusion of two of these nuclei as described by CHMIELEWSKI, do not occur. The male chromatophores in the zygote disorganize in about fourteen days after conjugation, leaving only the chromatophores of the female gamete. The writer also talks about a reduction of the hereditary mass, referring to the nuclear material, but nothing in the text or figures indicates any counting of chromosomes or any study of the mechanism of reduction. The paper contains a detailed account of the chemical changes occurring during the development of the zygospore.—CHARLES J. CHAMBERLAIN.

Plantae Lindheimerianae.—To students of the Texan flora ENGELMANN and GRAY'S *Plantae Lindheimerianae*, in two parts, is a classic. It now appears that all of the collections of this pioneer botanist were not published and distributed, and the rich remnant came into the possession of the Missouri Botanical Garden

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[31] VAN BEUSEKOM, JAN, On the influence of wound stimuli on the formation of adventitious buds on the leaves of *Gnetum Gnemon* L. Recueil Trav. Bot. Néerl. **4**:pp. 27. *pls.* 3. 1907.

[32] TRÖNDLE, A., Ueber die Kopulation und Keimung von Spirogyra. Bot. Zeit. **65**:188–216. *pls.* 5. 1907.